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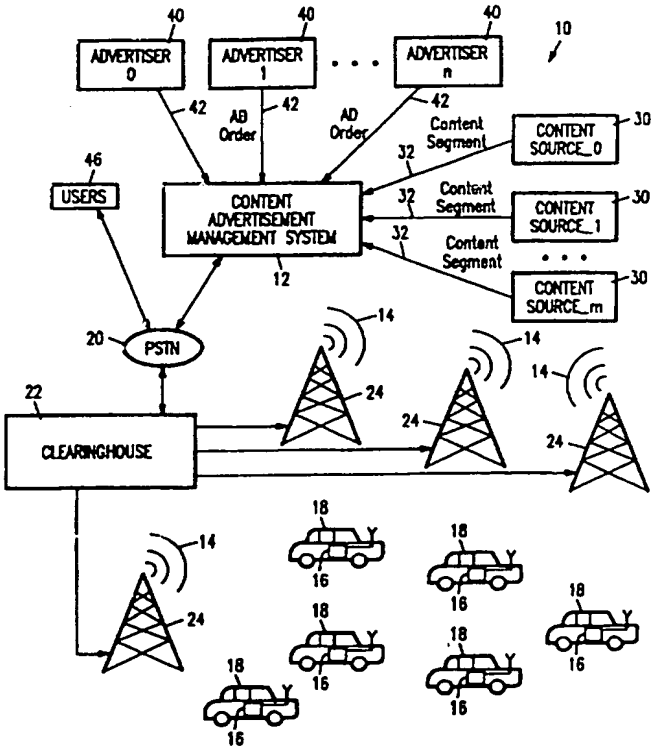
(54) Title: SELECTIVE ADVERTISEMENT PRESENTATION

(57) Abstract

Selective advertisement presentation occurs by first downloading to a population of receiving devices (16) a user profile characterizing an associated user in terms of demographic or psychographic criteria. Advertising material is then widely broadcast to the population of receiving devices (16) in association with a target profile. When a receiving device (16) receives the advertising information, it compares the stored user profile with the target profile and presents the advertising information only upon match or sufficient correspondence therebetween. Additional user subscription information may be presented at the time of advertisement presentation. Advertising material is thereby selectively presented only to users meeting designated demographic or psychographic criteria and having heightened interest in the presentation.



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SELECTIVE ADVERTISEMENT PRESENTATION

BACKGROUND OF THE INVENTION

The present invention relates generally to radio broadcast systems, and particularly to a method and system for broadcasting advertising and content information so that only selected information reaches each specific audience.

Advertisers often focus on an intended audience defined by demographic or psychographic criteria. For example, an advertiser may wish to target consumers of a given age or income range because the advertised product is more likely of interest to such persons. Wide area broadcast of advertising information inefficiently exposes advertisements to persons outside an intended target group. Advertisements which are tailored to a specific audience may be found confusing or offensive to persons outside that specific audience.

Some advertisements appear in selected media because the selected media is used primarily by a target group. For example, a sports equipment manufacturer advertises sports equipment in magazines featuring sports interests. To the extent that a given product spans multiple demographic criteria, the advertiser advertises in separate publications. Direct mail advertisements are typically based on some

information, e.g., age, sex, or income, known about the addressee.

Wide area advertisement dissemination has the advantage of covering a broad spectrum of criteria, but the disadvantage of inefficiency or inappropriate exposure, e.g., exposure to persons not interested in the product category. Specific advertisement dissemination, i.e., placement in specific media, has the advantage of targeting specific persons, but the disadvantage of possibly not meeting all intended demographic or psychographic ranges. Heretofore, a single advertising media cannot provide both targeted advertising and wide area broadcasting. Many advertisers vary target audience criteria and, therefore, cannot consistently use one advertising media efficiently.

Advertising efficiency improves when the advertiser delivers an advertisement only to members of an intended audience. Advertising versatility improves when the advertiser adjusts target audience criteria flexibly and thereby more closely meets specific demographic or psychographic criteria for a given advertisement.

It would be desirable to provide advertising material to selected persons based on demographic or psychographic criteria, and avoid advertisement presentation to those not meeting particular demographic or psychographic criteria.

Furthermore, it would be desirable to provide advertising material in conjunction with other information the recipient is particularly interested in receiving or has specifically requested thereby enhancing recipient interest in associated advertising material.

SUMMARY OF THE INVENTION

A method of selective advertisement presentation under the present invention begins by downloading to each member of a population of receiving devices a user profile characterizing the associated user. The user profile includes demographic or psychographic information such as age, sex, income, and interest topics. The method then broadcasts to the population of receiving devices advertising segments. Each advertising segment is associated with a target profile. Target profiles characterize an intended audience in terms of demographic or psychographic information such as age, sex, income, and interest topics. Advertisement presentation at a given receiving device operates as a function of a match or sufficient correspondence between the user profile and the target profile. When the user profile matches or sufficiently corresponds to the target profile, the associated advertising segment is presented to the user. Advertising segments presented to users thereby meet demographic or psychographic criteria specified by the advertiser.

In an information distribution system including an information broadcast facility and a population of information receiving devices providing information to a population of users, each user being associated with at least one information receiving device, a method of selective advertisement presentation under the present invention begins by collecting a user profile for each of the users. The user profiles are transmitted to the associated information receiving devices for storage therein. When an advertisement is later transmitted to the population of information receiving devices it includes an associated target profile. Advertisement presentation to a given user at a given receiving device occurs when the stored user profile matches or sufficiently corresponds to a target profile transmitted with the advertisement.

A selective advertisement presentation system under the present invention includes an information transmission facility and a population of information receiving devices. The information transmission facility transmits user profiles and transmits advertising material in association with a target profile. Each receiving device includes an information storage portion and an advertisement presentation portion. Each device stores in the information storage portion an associated user profile obtained from the transmission facility. Each receiving device compares its stored user profile to a target profile of transmitted advertising material. Each device presents advertising material only when

the target profile associated therewith matches or sufficiently corresponds to the stored user profile.

The subject matter of the present invention is particularly pointed out and distinctly claimed in the concluding portion of this specification. However, both the organization and method of operation of the invention, together with further advantages and objects thereof, may best be understood by reference to the following description taken with the accompanying drawings wherein like reference characters refer to like elements.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the invention, and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings in which:

FIG. 1 illustrates generally a selective advertisement presentation system according to a preferred embodiment of the present invention.

FIG. 2 illustrates generally by flow chart steps executed at a transmission facility of the system of FIG. 1.

FIG. 3 illustrates generally by flow chart steps executed at a receiving device of FIG. 1.

FIG. 4 illustrates a front panel of a receiving device of FIG. 1 taking the form of a car radio.

FIG. 5 illustrates by block diagram the receiving device of FIG. 4.

FIG. 6 illustrates by flow chart steps executed at the receiving device of FIG. 4 when receiving transmitted information.

FIG. 7 illustrates by flow chart steps executed at the receiving device of FIG. 4 in response to user manipulation.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates generally a selective advertisement presentation system 10 according to a preferred embodiment of the present invention. In FIG. 1, selective advertisement presentation system 10 operates within a paging system 12 providing data signals 14 to a population of remote receivers 16. Receivers 16 may take a variety of forms. In the present illustration, however, receivers 16 take the form of vehicle radios carried within vehicles 18. The total population of receivers 16 collecting information from paging system 12 may include other forms of radio signal receiving devices, e.g., conventional pagers, wristwatch pagers, and personal information terminals. The preferred embodiment of the

present invention will be illustrated, however, with reference to receivers 16 provided as vehicle radios in vehicles 18.

Paging system 12 interacts, via public switch telephone network 20, with a clearing house 22. Clearing house 22 receives a data stream from paging system 12 and passes the data stream to a set of FM radio stations 24. Each radio station 24 provides a conventional FM audio signal, and also the data signal 14 in its sideband frequency. It should be understood, however, that the present invention may be implemented in a variety of information distribution systems not necessarily limited to the particular paging system 12 shown herein.

Paging system 12 uses a time-division multiplexed addressing protocol directing information to receivers. Addressing includes individual receiver 16 addressing and group addressing. Generally, data packets are sent during time slots associated with particular receivers or groups of receivers. Data packets can be linked to download large data files to receivers 16. For a comprehensive description of a time-division multiplexed paging system, U.S. Patent No. 4,713,808 shows a paging system including a paging system clearinghouse and a variety of FM radio stations each providing as a main audio channel an audio signal and as a subcarrier or sideband channel a data signal carrying paging data to a population of remote paging devices.

Thus, paging system 12 downloads, in addition to conventional paging messages, a variety of information to receivers 16. In the preferred embodiment of the present invention, information downloaded to receivers 16 includes voice data and receivers 16 audibly present such voice data. Because receivers 16 are located in vehicles 18, audible presentation is preferred. For other forms of receivers 16, textual or graphic presentation of information may be appropriate.

System 10 makes available to users information subscriptions, e.g., weather, sport, financial, stock, and news items. A plurality of content sources 30, also designated content source_0...m in FIG. 1, each provide to paging system 12 content segments 32. In the illustrated embodiment of the present invention, each content segment 32 is a voice data file. Content segments 32 may be provided in other data forms, e.g., text or graphic files, given a mechanism at receiver 16 capable of presenting text or graphic information. Content sources 30 continuously provide content segments 32 to paging system 12 and system 12 relays content segments 32 to subscribing users of receivers 16. Some content segments 32 represent general interest, common, or current information, e.g., current weather or stock information. Paging system 12 relays current information directly to receivers 16, by way of clearinghouse 22 and radio stations 24, for immediate presentation. Some content segments 32 are particularly

relevant to an identifiable target demographic or psychographic profile. For example a news item on a particular sporting event may be associated with a particular target demographic or psychographic profile. In any event, content segments 32 are provided to users of receivers 16 based on a user subscription for such information service. Important to note, the user has specifically requested such content segments 32 and has a relatively heightened interest in such information. When a user subscribes to a given information service, the user's receiver 16 holds a group address associated with that information service. When the receiver 16 encounters a group address in data signal 14 matching one of its stored group addresses, the corresponding transmission is stored for presentation to the user.

A plurality of advertisers 40, designated advertiser_0...n in FIG. 1, place advertisement orders 42. Each advertisement order 42 includes a voice data segment, e.g., ``brought to you by XYZ Corporation.'' A voice data segment may be a more complete presentation or information-commercial carrying its own content, i.e., something beyond mere reference to a sponsoring advertiser. Each advertisement order 42 also includes a "target profile", e.g., an identification of a target audience expressed in terms of demographic or psychographic information including but not limited to age, sex, income, interest topics, and the like.

System 10 interacts at various times with users 46, i.e., users, of receivers 16, and gathers demographic or psychographic information. For example, when users 46 first subscribe to paging system 12, certain information may be collected, e.g., age, sex, income indicators, topic interests and other information items indicating demographic or psychographic values. Further, users 46 subscribe to certain information services, e.g., sports, weather, or stock information, regularly provided by content sources 30 as content segments 32. Each time a user 46 subscribes to a given information service, this provides further indication of demographic or psychographic values for that user 46. System 10 thereby collects over time a body of demographic or psychographic information for each user 46. As used herein, the term "user profile" refers to a collection of such information pertaining to a given user of a receiving device 16. The user profile may be viewed as a multi-dimensional value expressed in terms of specific numeric values or ranges of values for a variety of demographic or psychographic criteria. By coordinating the structure of user profiles, each representing a particular user of a receiver 16, and target profiles, designated by advertisers 40 for a particular advertisement, a comparison may be executed by means of, for example, a query language. A match or substantial correlation between a user profile and a target profile may be detected by appropriate comparison algorithms or multi-dimensional analysis.

System 10 maintains at paging system 12 a data base of all user 46 profiles. Furthermore, each individual user profile is downloaded into the corresponding receiving device 16. By executing similar algorithms at paging system 12 and at receivers 16, selective advertisement presentation system 10 precisely predicts profile comparisons within each member of the population of receivers 16. In this manner, selective advertisement presentation system 10 offers to advertisers 40 a specific and accurate prediction of the number and character of people receiving particular advertisements for a given target profile.

Thus, system 10 collects information from users 46, advertisers 40, and content sources 30. Users 46 provide demographic information concerning themselves. Each receiver 16 receives and stores a corresponding user profile and system 10 maintains centrally a data base of all user profiles. Advertisers 40 provide advertising segments, or sponsor information services, including specification of demographic information identifying a target audience. Users subscribe to information services originating from content sources 30. Advertisement or content sponsorship presentation at each receiver 16 is based on a correspondence between the target profile identified by the advertiser and the particular receiver 16 user profile.

FIGS. 2 and 3 illustrate generally programming executed at paging system 12 and receivers 16, respectively. In FIG. 2, system 12 downloads in block 200 user-specific demographic or psychographic information, i.e., user profiles, to receivers 16. System 12 broadcasts in block 202 advertisements in association with a target profile. Each receiver 16 thereby receives and maintains a user profile representing its associated user. Advertisements transmitted in association with a demographic specification, i.e., target profile, allow a particular receiver 16 to compare the target profile and user profile and determine advertisement presentation. Once the user profiles are stored in receivers 16, processing loops at block 202 whereby repeated wide area advertisement broadcasts are selectively presented at particular receivers 16 as a function of a correspondence between a stored user profile and a target profile.

In FIG. 3, receiver 16 receives and stores its particular user profile in block 300. In block 302, receiver 16 receives an advertisement and associated target profile. In decision block 304, receiver 16 compares the advertisement target profile with its particular user profile. If a correspondence exists, then processing branches through block 306 where the advertisement is presented to the user and processing returns to block 302 to receive a next advertisement. If no demographic or psychographic correspondence exists, then processing branches directly from decision block 304 to block

302. Advertisement presentation at a given receiver 16 thereby corresponds to an associated user's demographic or psychographic information. An advertiser specifies an audience by a target profile transmitted with its advertisement. Advertisements are thereby directed, i.e., presented, only to users matching a target profile.

As used herein, the term ``advertisement presentation'' includes a determination by the receiving device 16 to either present immediately or to make available for later presentation a given advertisement or content segment. Thus, receivers 16 store advertisements or content segments without immediate presentation to the user. For example, when the user is not in vehicle 18, the corresponding receiver 16 stores advertisements or content segments selected for presentation. The user of a receiver 16 later interacts, by appropriate user interface, with receiver 16 to actually see or hear the advertisement presentation.

FIGS. 4-7 illustrate in more detail a particular implementation of the present invention. Under this particular implementation, each receiver 16 receives and stores a set of advertisement segments, each associated with a target profile. This set of advertisement segments need only be downloaded to the receiver 16 once, e.g., at the beginning of each day. Throughout the day, content segments 32 are downloaded to receiver 16 by group addressing, e.g., by

information subscription established by the user. Information subscriptions, i.e., content segments 32, directed to a receiver 16 are stored until the user activates a message presentation button. Upon presentation of a given content segment, each receiver 16 interrogates its set of stored advertisement segments to couple an appropriate advertisement segment with the content segment.

FIG. 4 illustrates a receiver 16 as implemented in the form of a vehicle FM radio. Each receiver 16 includes an antenna 400 receiving the conventional FM voice broadcast from a selected FM radio station 24 as well as the data signal 14 from station 24. Each receiver 16 includes a text or graphic display 402 and a set of FM user controls 404, e.g., volume, tone, balance, and station selection controls. Each receiver 16 further includes a message display button 406 on the face of receiver 16 and a message icon 408 appearing when appropriate on display 402. Thus, receivers 16 operate as conventional FM radios, and also as information receiving devices operating under paging system 12. When receiver 16 receives and stores information for presentation to the user, receiver 16 activates icon 408 indicating to the user availability of stored information for presentation. The user then activates message button 406 to review, e.g., see or hear, information previously received and stored by receiver 16.

FIG. 5 illustrates generally in block diagram a receiver 16. Receiver 16 includes a data receiver 500 responsive to paging system 12 data signal 14. Receiver 16 also includes a conventional FM audio receiver 502. Receivers 500 and 502 couple to antenna 400 to receive data and audio signals therefrom. Audio receiver 502 responds to FM user controls 404 and provides a left and right audio signal 504 to an amplifier 506. Amplifier 506 drives left and right speakers 508. Data receiver 500 provides to a controller 510 information collected from data signal 14. A memory 512 stores a variety of information including a user address 512a, a plurality of group addresses 512b, a plurality of advertisement segments 512c, a plurality of content segments 512d, a plurality of paging messages 512e, and a user profile 512f. Advertisement segments 512c, content segments 512d, and paging messages 512e may take a variety of data formats. In the illustrated embodiment, such segments may be provided in text, graphic, or voice data file formats. Presentation of text or graphic information occurs at display 402 when appropriately driven by controller 510. Presentation of voice data files occurs via digital-to-analog block 514 driven by controller 510 and driving amplifier 506. Controller 510 includes a blanking control 516 applied to audio receiver 502 to override, i.e., blank-out, left and right audio signals 504 at times when controller 510 presents audibly information via digital-to-analog block 514.

FIG. 6 illustrates generally programming executed by controller 510 in collecting information for storage in memory 512. The user address 512a is static, i.e., fixed and does not change for a given receiver 16. Group addresses 512b may be downloaded in appropriate control packets to establish response by a given receiver 16 to group addressing, e.g., information subscriptions. Advertisement segments 512c are downloaded relatively infrequently, e.g., once per day. Content segments 512d and paging messages 512e are constantly sent to receivers 16 throughout the day. The user profile 512f is downloaded when necessary, i.e., when additional demographic or psychographic information is collected regarding that particular user.

In FIG. 6, receiver 16 activates to receive information. In decision block 600, receiver 16 looks for a user address, i.e., information directed to this specific receiver 16. If the transmission bears an address matching user address 512a, then processing advances to decision block 602. Decision block 602 detects presence of a user profile in the data signal 14 transmission. If a user profile is present, then processing advances to block 604 where a new user profile 512f is stored in memory 512. Otherwise, processing branches through block 606 where a paging message 512e is stored in memory 512. Returning to decision block 600, if a user address is not detected, then decision block 608 detects presence of a group address, e.g., transmission of a content

segment 32 or an advertising segment under group addressing. If the transmission includes a content segment 32 then a new content segment 512d is stored in block 612. Otherwise, a new advertisement segment 512c is stored in block 614. While downloading of advertisement segments 512c is shown under group addressing, it will be appreciated that advertisement segments 512c could be downloaded under other addressing schemes, i.e., system-wide or to specific receivers 16 by use of appropriate user-specific addresses. In any event, information collection and storage as represented in FIG. 6 allows a receiver 16 to collect and store advertising segments 512c, content segments 512d, paging messages 512e, and user profiles 512f.

FIG. 7 illustrates processing of controller 510 in response to user activation of the message button 406. In FIG. 7, controller 510 retrieves in block 700 a next item from memory 512 for presentation to the user, i.e., a content segment 512d or a paging message 512e. If decision block 702 detects the next item as a paging message, then processing branches to block 704 where the paging message is presented to the user and processing returns to block 700. Otherwise, processing advances from decision block 702 to decision block 706 where controller 510 determines if the next item is a content segment 512d, i.e., information subscription. If the next item is a content segment 512d, then processing branches to block 708 where controller 510 interrogates memory 512 to

identify an appropriate advertisement segment 512c, i.e., one having a target profile corresponding to user profile 512f. Controller 510 then presents the concatenation of the current content segment 512d and a selected one of the advertisement segments 512c. As may be appreciated, selecting an appropriate advertisement segment 512c for presentation with a given content segment 512d occurs by comparison of the user profile 512f and target profiles provided with the stored advertisement segments 512c. A set of algorithms or query language processing executed in block 708 identifies an appropriate advertisement segment 512c. Such query language or algorithms may provide a default advertisement segment 512c or a default null advertising segment 512f. In any event, a content segment 512b is presented with a selected advertisement segment 512c in block 710 as a function of matching or corresponding demographic or psychographic criteria.

Thus, selective advertisement presentation has been shown and described. Selective advertisement presentation under the present invention allows advertisement broadcast in a wide-area advertising media, yet allows targeting of advertisement presentation for persons meeting particular demographic or psychographic criteria. A particular advertiser can, under the present invention, present one form of an advertisement to one segment of the population and provide a second form of the advertisement to a different segment of the population. For

example, a women's clothing ad can be tailored for women and in fact directed only to women. Persons of a given demographic or psychographic characterization see advertisements intended specifically for them. Information subscription services, i.e., content items specifically requested by a given user, may be coupled at the receiving device to a specific advertising sponsor with heightened user interest in the content presentation when the advertisement sponsorship is announced. The paging system need not assign a specific group address or transmission channel to a given advertiser. System 10 dynamically reassigns demographic or psychographic criteria daily on an advertisement-by-advertisement basis. The advertiser enjoys very precise and flexible targeting for each advertisement presentation. Content of general interest may be presented to a broad spectrum audience, while content of specific interest may be directed only to those persons likely to have that specific interest. One group may get a completely different set of content or advertising items than another group.

In the specific embodiment of the invention described above, all advertising segments are stored. Alternatively, in other embodiments of the invention only the segments that best fit the user profile are stored.

It will be appreciated that the present invention is not restricted to the particular embodiment that has been

described and illustrated, and that variations may be made therein without departing from the scope of the invention as found in the appended claims and equivalents thereof.

CLAIMS

What is claimed is:

1. A method of selective advertisement presentation comprising the steps:

downloading to each member of a population of receiving devices a user profile characterizing an associated user;

broadcasting to said population of receiving devices advertising segments, each advertising segment being associated with a target profile; and

presenting at a given receiving device a given advertising segment when a user profile stored at said given receiving device corresponds to a target profile associated with said given advertising segment.

2. A method according to claim 1 wherein said user profile and said target profile include information concerning at least one of age, sex, income indicator, and interest topic.

3. A method according to claim 1 wherein said presenting step comprises storing said given advertising segment and showing said given advertising segment in response to user interface of said receiving device.

4. A method according to claim 1 wherein said presenting step includes presenting to said given use an information subscription presentation previously requested by said given user.

5. In an information distribution system including an information broadcast facility and a population of information receiving devices providing information to a population users, each user being associated with at least one information receiving device, a method of advertisement presentation comprising the steps:

collecting a user profile for each of said users;

transmitting each user profile to the associated information receiving device for storage therein;

transmitting an advertisement to said population of information receiving devices, said advertisement being associated with a target profile; and

presenting to selected ones of said users said advertisement when said target profile corresponds to said user profile.

6. A method according to claim 5 wherein said user profile characterizes a user relative to at least one of age, sex, income, and topic interest.

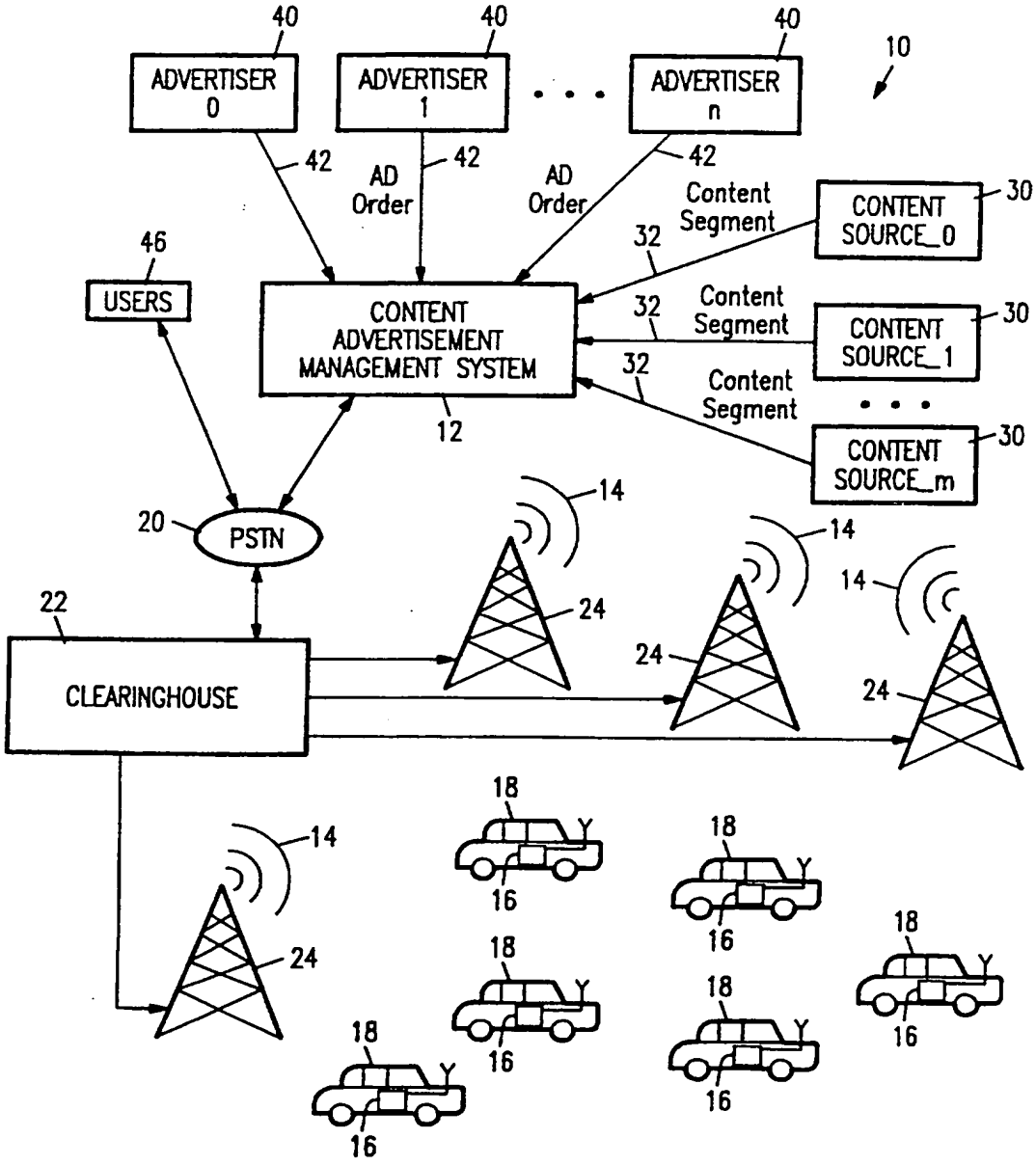
7. A method according to claim 5 wherein said target profile characterizes a user relative to at least one of age, sex, income, and topic interest.

8. A method according to claim 5 wherein said presenting step includes presenting to said selected ones of said users an information subscription presentation previously requested by said selected ones of said users.

9. A selective advertisement presentation system comprising:

an information transmission facility, said information transmission facility transmitting user profiles and transmitting advertising material in association with a target profile; and

a population of information receiving devices, each device including an information storage portion and an advertisement presentation portion, each device storing an associated user profile obtained from said transmission facility, each device comparing its stored user profile to a target profile of transmitted advertising material and presenting at said presentation portion said advertising material when said target profile corresponds to said user profile.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ADVERTISER 1
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ADVERTISER n
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AD Order
42
AD Order
42
Content Segment
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CONTENT SOURCE_0
30
46
USERS
CONTENT ADVERTISEMENT MANAGEMENT SYSTEM
12
32
Content Segment
CONTENT SOURCE_1
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Content Segment
CONTENT SOURCE_m
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PSTN
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24
22
CLEARINGHOUSE
18
16

FIG. 1

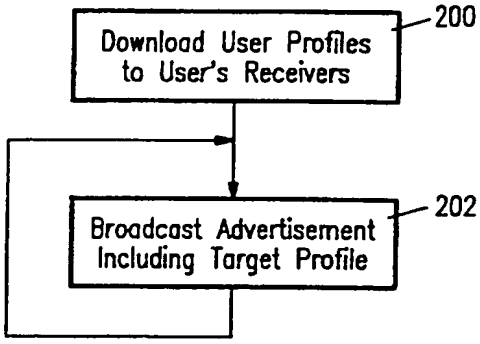

FIG. 2

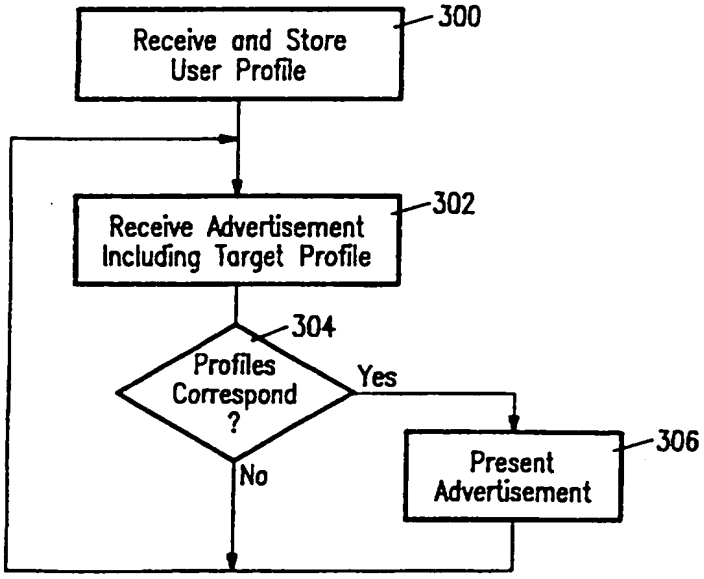

FIG. 3

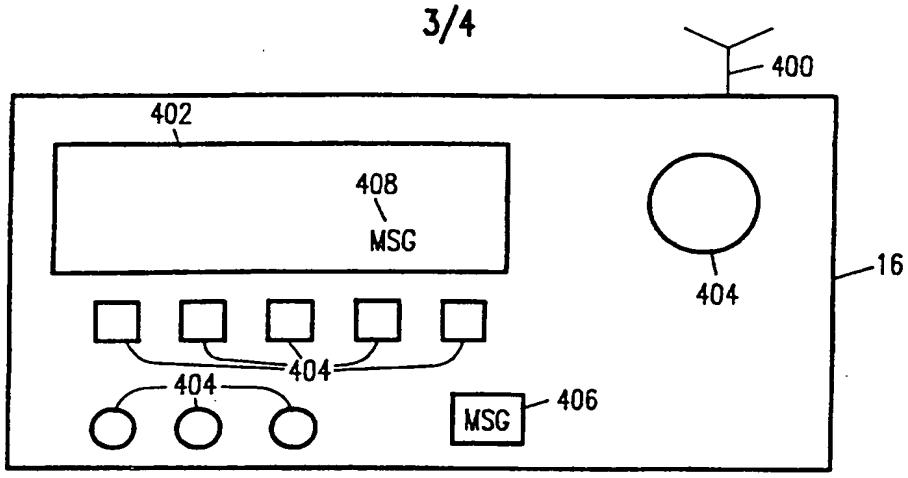
400
402
408
MSG
404
16
404
404
MSG
406

FIG. 4

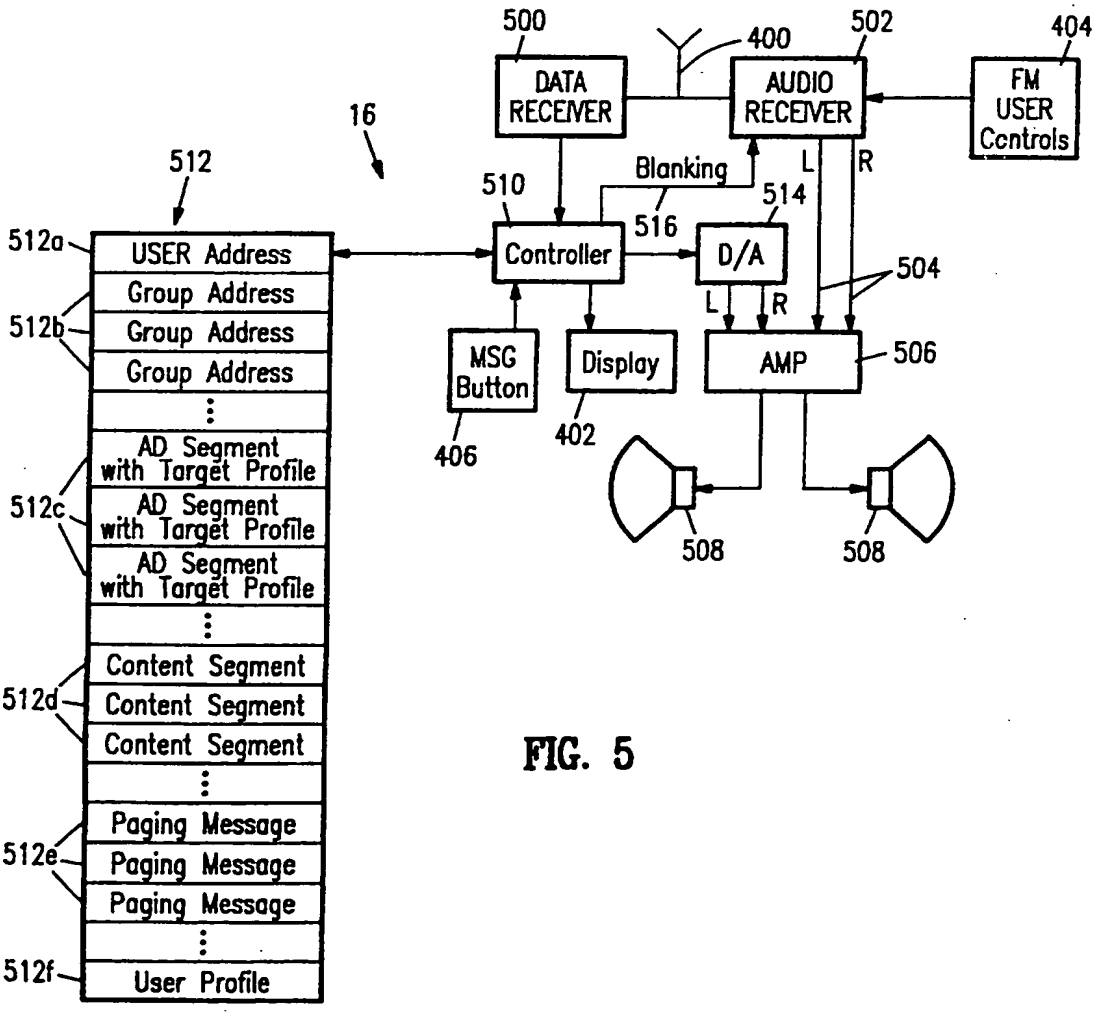
500
400
502
404
DATA RECEIVER
AUDIO RECEIVER
FM USER Controls
16
512
Blanking
L
R
510
514
516
Controller
D/A
504
L
R
MSG Button
Display
AMP
506
406
402
508
508
512a
USER Address
Group Address
512b
Group Address
Group Address
AD Segment with Target Profile
512c
AD Segment with Target Profile
AD Segment with Target Profile
Content Segment
512d
Content Segment
Content Segment
Paging Message
512e
Paging Message
Paging Message
512f
User Profile

FIG. 5

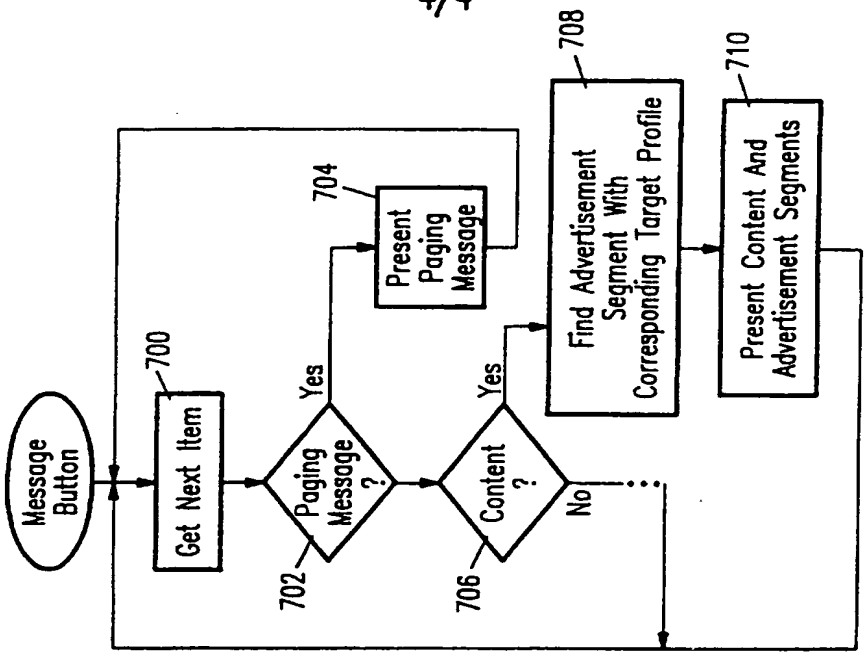

FIG. 7

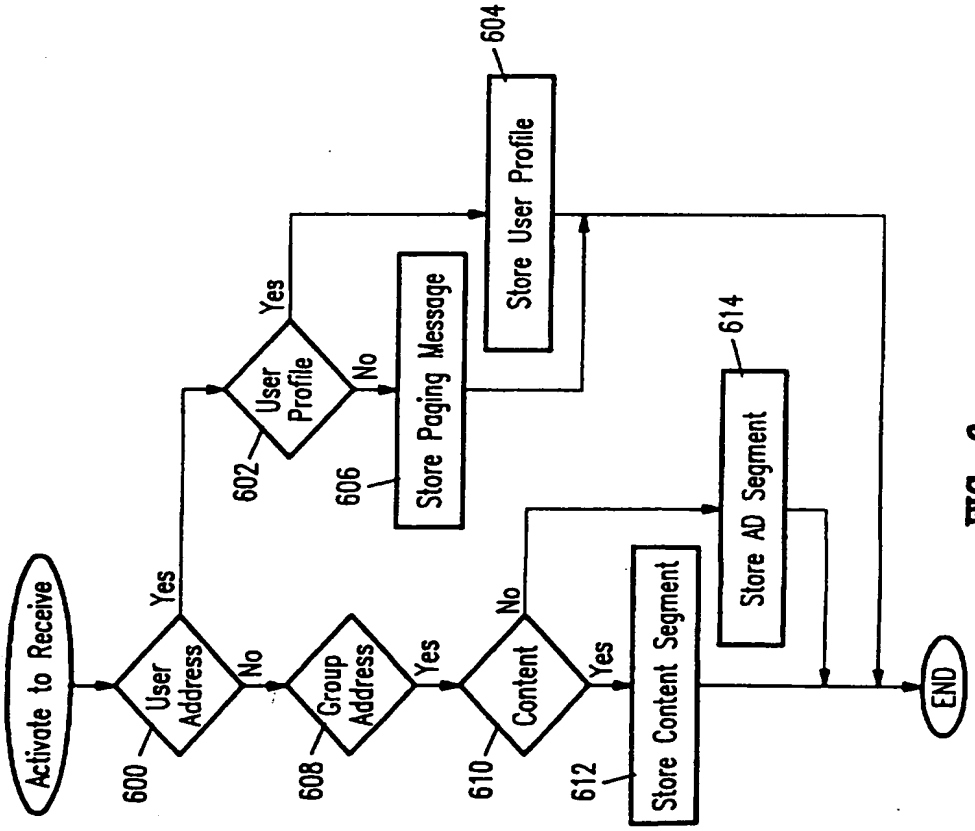

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/17690

A. CLASSIFICATION OF SUBJECT MATTER
IPC(6) :H04B 17/00; H04N 7/00
US CL :Please See Extra Sheet.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 348/1, 9; 455/2, 45
H04N 7/00, 7/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,251,324 A (MCMULLAN, JR.) 05 October 1993, see whole document.	1-9
Y	US 5,446,919 A (WILKINS) 29 August 1995, see whole document.	1-9

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search 30 JANUARY 1997	Date of mailing of the international search report 25 FEB 1997
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer JOHN W. MILLER Telephone No. (703) 305-4795

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INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER:
US CL :

348/1; 455/2